

JOURNAL
OF THE
WASHINGTON ACADEMY OF SCIENCES

VOL. 21

DECEMBER 4, 1931

No. 20

BOTANY.—*Notes on yagé, a drug plant of southeastern Colombia.*¹ C. V. MORTON, U. S. National Museum. (Communicated by E. P. KILLIP.)

The National Museum has recently received from Mr. Guillermo Klug, of Iquitos, Peru, a large collection of plants obtained by him in the Putumayo region of southeastern Colombia. Mr. Klug became especially interested in various drug plants used by the natives as stimulants, and included herbarium specimens of these in his collection. Three of the plants, known to the Indians under the general name of *yagé*, belong to the genus *Banisteriopsis* C. B. Robinson (Family Malpighiaceae), subgenus *Eubanisteriopsis* Morton, nomen novum (*Banisteria* subgenus *Eubanisteria* Niedenzu). The necessity for using the name *Banisteriopsis* for this genus has been discussed by the author in a former paper.² The type of the genus (and subgenus) is *Banisteriopsis argentea* (Kunth) Robinson & Small.

***Banisteriopsis inebrians* Morton, sp. nov.**

Sect. *Camptostylis*, Subsect. *Cosmiothamnus*. Liana altissima plus quam 30 m. scandens, ramulis jam hornotinis demum usque 4 mm. diametro fuscescentibus glabratis teretibus striatis lenticellis numerosis instructis, internodiis 5–6 cm. longis; lamina foliorum oppositorum late elliptica basi rotundata obliqua apice solum acuta, ca. 11 cm. longa, 6.5 cm. lata, supra laevis nitida olivaceo-viridis, subtus concolor mox utrinque glabrata (pilis perpauca persistentibus exceptis), margine paullo revoluta subcoriacea, nervis mediis primariisque supra depressis subtus elevatis prominentibusque, utrinque jam demum dense strigosis, nervis primariis utrinque 4 vel 5 valde decurrentibus, basi nervorum infimorum glandulas 2 magnas nigras gerentibus, nervis

¹ Published by permission of the Secretary of the Smithsonian Institution. Received October 28, 1931.

² "A new *Banisteria* from Brazil and British Guiana," Proc. Biol. Soc. Wash. 43: 157. 1930.

secundariis inter se parallelis vix prominulis; petiolus 10–12 mm. longus, ca. 1.5 mm. crassus, supra valde canaliculatus strigosus eglanduliferus; stipulae ad glandulas pubescentes magnas demum deciduas reductae; flores non suppetunt; inflorescentia axillaris, fructu vix ultra 5 cm. longa, paullulum composita, rhachi 4–9 umbellas gerente, umbellis ipsiis 4-floris, pedunculo inflorescentiae 6–14 mm. longo, pedunculis umbellarum 12–14 mm. longis, pedicellis sessilibus 13–14 mm. longis, sicut pedunculis persistente pubescentibus; sepala ovata obtusa puberula ca. 4 mm. longa, incurva, glandulas 8 oblongas ca. 2 mm. longas gerentia; styli recti apice orbiculari-capitati, anticus 3.5 mm. longus rectus 2 posticis crassior longior; samarae nuce densissime sericeae, ceterum demum parce strigosae; nux nigro-fusca oblonga, uno latere solum reticulato-rugosa, altero in alulas vel aculeos biseriatos ad 2 mm. longos excrescens, areola ventrali orbiculari 5–5.5 mm. diametro concava; ala dorsalis fere verticalis, late semiobdeltoidea, ca. 3.5 cm. longa, basi ca. 7 mm. lata, infra apicam ca. 16 mm. lata, margine antico incrassato recto basi vix appendiculato, margine postico curvato crenulato.

*Banisteriopsis caapi*³ diversa esse patet: petiolis subgracilibus apice 2 glandulis magnis instructis, stipulis minutis subulatis, laminis foliorum longe acuminatis, majoribus (usque 17 cm. longis, 6–9 cm. latis), nervis mediis et primariis demum glabris, inflorescentia valde majore, pedunculis umbellarum subnullis, stylo antico 2 posticis brevior, et ala samarae oblique oblongo-obovata. *B. quitensis*⁴ a nostra differt videtur: foliis longe acuminatis, fere eglanduliferis, stipulis parvis, inflorescentia terminali (?), magna 3 dm. longa, stylo antico 2 posticis brevior, lateribus nucis leviter solum tuberculatis fere laevibus, et alis minoribus (2.5 cm. longis, 11 mm. latis), obliquo-oblongis.

Type in the U. S. National Herbarium, no. 1,517,293, collected at Umbría, 0° 54' N, 76° 10' W, Comisaría del Putumayo, Colombia, in forest, alt. 325 meters, Jan.-Febr., 1931, by G. Klug (no. 1964).

Mr. Klug's note reads, "1964. 'Yagé del monte.' From root to tip, more than 30 meters long. It takes 6 men to drag the lower half when cut. I estimate that this half weighs more than 500 kg." Over 60 herbarium sheets of this plant were prepared by Mr. Klug, all of which have been examined in preparing the above description.

The related species *Banisteriopsis caapi* and *B. quitensis* are also powerful drug plants. The former is more closely related, differing in having the petioles bi-glandular at apex, the stipules minute and subulate, long acuminate leaves with glabrous midvein and nerves, the inflorescence much larger, the peduncles of the umbels very short, the anterior style shorter than the two posterior, and the samara wing obliquely oblong-obovate. *B. quitensis* has quite differently shaped samaras from those of our species. It is however perhaps much more nearly related to *B. caapi* than its disposition by Niedenzu would

³ *Banisteriopsis caapi* (Spruce) Morton, nomen novum. (*Banisteria caapi* Spruce; Grisebach in Flora Brasiliensis 12¹: 43. 1858.)

⁴ *Banisteriopsis quitensis* (Ndz.) Morton, nomen novum. (*Banisteria quitensis* Ndz. in Ind. lect. Lyc. Brunsverg p. hiem. 1900–1901: 10. 1900.)

indicate. The character which he stresses, namely the long-decurrent primary veins, is a variable one, being found in all three of the species here discussed. The length of the decurrent portion is apparently far from constant and is probably of no diagnostic value.

The following notes on the use and effect of the drug *yagé* are kindly supplied by Mr. Klug. The *yagé cultivado* referred to (Klug 1934) is apparently *Banisteriopsis quitensis*, but the specimen is sterile and the determination therefore doubtful. The specimens of *oco yagé* or *chagro panga* (Klug 1971) also are sterile. The leaves however appear to be very like those of *Banisteriopsis rusbyana*,⁵ of which two sheets of the type collection⁶ are in the U. S. National Herbarium.

“One of the most interesting plants found in the region of the upper courses of the Putumayo and Caquetá Rivers is the *yagé*. The Indians make a beverage from either the wild or cultivated *yagé*, boiling it in a large earthenware vessel an entire day until there is formed a sort of liquid, like the syrup of sugar cane. They add to the *yagé* the leaves and the young shoots of the branches of the *oco yagé* or *chagro panga* (no. 1971), and it is the addition of this plant which produces the “bluish aureole” of their visions. These are like cinematograph views, and occur after about a half liter of the drink has been consumed in portions an eighth of a liter each at intervals of half an hour. Thereafter, the Indian falls into a profound sleep during which he is in a state of complete insensibility and anesthesia. During this period the subconscious activity acquires enormous intensity. The dreams follow each other with extraordinary precision and clearness, giving to the intoxicated person, according to the observations of missionaries, the power of double vision, and of seeing things at a distance, like certain mediums in their trances. Upon awakening, he retains clearly the hallucinations and fantastic visions which he experienced in unknown regions. Perhaps this drug has the property of developing the psychic faculties. In 1919 Dr. Zerda Bayon, specialist in the chemistry of plants, gave this plant the name *Telepatina*.

“Prof. Barriga Villalba experimented upon animals with the yageina, which he succeeded in isolating, with the following results: If a horse has a weak dose of a few centigrams per kilogram of its weight injected into it an extreme excitation is produced, and the animal runs in all directions. The body begins to tremble and the animal maintains its equilibrium with the greatest difficulty. With a larger dose, something like twenty centigrams per kilogram, the yageina becomes a real poison, and the animal loses its equilibrium, cries, falls into convulsions, its temperature is lowered, and anesthesia becomes

⁵ *Banisteriopsis Rusbyana* (Ndz.) Morton, nomen novum (*Banisteria rusbyana* Ndz. in Ind. Lect. Lyc. Brunsberg. p. aest. 1901: 19. 1901).

⁶ Beni River, Bolivia. July, 1886, *Rusby* 2171; distributed as *Hiraea*.

general. The same results were obtained with dogs, in which complete anesthesia without loss of vision or sense of smell was proved.

"The small doses which Barriga Villalba tried upon himself produced a profound sleep and certain sensations of well-being. But this was very far from being the effect on the savages, for which reason Professor Muñoz, of Colombia, employed 30 to 40 grams of the drink, prepared according to the manner of the natives. Effect: At first there was a slight stimulation of the nerves, similar to that of caffeine, then a slight dilation of the pupils. All exterior objects acquired a strange appearance, aureoled and of a blue color. Then came the most extraordinary hallucinations, resembling those of hashish, very magnificent, very terrifying. These are due without doubt to the excitation of the cerebral centers of vision, the sensibility of which is such, that the person who has taken *yagé* is capable of *seeing objects in the midst of the most complete obscurity*.

"In Umbría I have had occasion to converse with persons of education who have told me of taking *yagé*, prepared by the savages (but without the addition of the leaf of *chagro panga* or *oco-yagé*) for the cure of malaria from which they suffered, and they have assured me that with three drinks of this (about 150 grams) they have been cured completely, and that for several years they have not suffered further from this illness."

PROCEEDINGS OF THE ACADEMY AND AFFILIATED SOCIETIES

GEOLOGICAL SOCIETY

478TH MEETING

The 478th meeting of the Society was held in the Assembly Hall of the Cosmos Club, April 22, 1931, President O. E. MEINZER presiding.

Informal communications: H. D. MISER described certain small anticlines exposed in the Cason shale at the Cason manganese mine near Batesville, Arkansas, and ascribed them to compaction of the shale above an irregular buried topography. The Cason shale rests unconformably on the Fernvale limestone, the relief of the surface of unconformity being about one foot. Above each buried hill the shale is folded into an anticline and above each valley it is folded into a syncline. The folds are not aligned and they die out about 3 feet above the top of the limestone. The shale contains fossil algae that are normally spherical but that are so flattened in the Cason shale that their present minor diameters are about one-third their original lengths. The major diameters are parallel to the bedding of the shale. It is believed, therefore, that the shale has been compacted to about one third its original thickness. Miser pointed out that some believe such folds yield part of the petroleum in the mid-Continent oil fields.

Regular program: C. N. FENNER and A. L. DAY: *Borehole investigations in the geyser basin of Yellowstone National Park.*—For a number of years the Geophysical Laboratory of the Carnegie Institution of Washington has been